THE Unexplained

MYSTERIES OF MIND SPACE & TIME

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Volume 1 Issue 2

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Is it really possible to be able to travel to a different universe? We examine several theories on the structure and use of **Black holes**. In our second article on **Spontaneous human combustion**, we concentrate on the peculiar qualities of this weird 'visitation'. **Kirlian photography** is said to capture the auras of subjects photographed in a high-frequency field. Such well-known psychics as Matthew Manning have been photographed – with amazing results. In the second part of our **Hypnosis** series, we look at the case for reincarnation and the extraordinary array of evidence given by individuals under regressive hypnosis. And to end on an intriguing note, another classic sighting from the **UFO Casebook** – the New Zealand filming of 1978.

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The exact nature of hypnosis has been debated for over 200 years. BRIAN INGLIS discusses its use in medicine, in crime detection and in exploring the possible evidence for reincarnation

The power of suggestion

MOST PEOPLE STILL THINK of hypnotists as slightly shady characters practising a highly dubious craft. We see in our mind's eye the evil Svengali, the character in George du Maurier's novel who lived off the unfortunate Trilby by putting the 'fluence on her so that she became an internationally acclaimed concert artist, though her ordinary voice was terrible. Today's stage hypnotist, however, is no longer the seedy villain of the story. He is a well-dressed and well-heeled smoothie with the patter of a conjuror, who exercises his talent before audiences in clubs.

The performance tends to follow a standard formula. Volunteers are called for, and one by one, the hypnotist addresses soothing words to them, like a mother putting her child to sleep. Those who respond remain on stage; the rest are sent back into the audience. Then, in groups or individually, those still on stage are told that they are very hot or very cold, very thirsty or very drunk – and they behave and feel as they are told to even if they make themselves look ridiculous.

The riddle of hypnosis

There is not, as yet, any clear explanation of the nature of hypnotism. Hypnosis is generally defined as a trance, that is, an altered state of consciousness. The extent of the alteration depends upon the individual. In any group, some of the volunteers will remember everything that has been done while they are on stage; others may recall nothing. But they will all have come under the hypnotist's influence.

What this means is that each of them has shed some of the controls, or thrown off some of the inhibitions, that training and habit normally impose on us. If somebody said to any of them, in ordinary conversation, 'You are a watchdog and you hear a burglar', it would raise only a laugh. On stage, the hypnotised subject gets down on hands and knees and barks. The hypnotist is he-who-must-be-obeyed; commands from other people are ignored unless he has given instructions that they should be obeyed, too.

Even more impressively, the accomplished hypnotist can give commands that will be obeyed after the subjects have come out of their trances and returned to their seats in the audience. If he gives them a 'post-hypnotic suggestion' that they should stand up and shout 'hip-hip-hooray' whenever the orchestra plays a certain tune, they will do so, without knowing why.

Hypnosis appears to switch off some part of our minds that ordinarily monitors our behaviour, instructing us what to do in any given set of circumstances without thought on our part. We hand this control system over to the hypnotist, much as an airline pilot may hand over the controls of his aircraft to somebody on the ground, who guides it in by radar with the help of an automatic pilot.

Watching people behave in this way – and often, to the amusement of the audience, making fools of themselves – appears to demonstrate the hypnotist's powers. But this is an illusion. The powers really lie in the hypnotised subjects. And these powers are far greater and potentially far more valuable than is generally realised, in spite of numerous demonstrations of a more serious nature of just what can be achieved under hypnosis.

In one form or another, hypnotism has been used throughout history. It has been exploited by tribal witch doctors and by priests in the temples of ancient Greece. But we owe the form in which it is practised today to Franz Mesmer and his disciples. Two

An 18th-century hypnotist supposedly projecting magnetism from the palms of his hands to induce a 'healing crisis' in his patient. In the 18th and early 19th centuries hypnotist Anton Mesmer and his followers believed they had found a new healing force called 'animal magnetism', which became the rage in fashionable circles in the capital cities of Europe

Below: unscrupulous stage hypnotists can give their profession a bad name. In this French hypnotist's show a girl from the audience, apparently under hypnosis, stripped off some of her clothes. But it was the same girl every night!

Bottom: a still from *Svengali*, the 1954 film version of George du Maurier's famous novel *Trilby*. Donald Wolfit played the evil hypnotist Svengali, Hildegarde Neff his victim, the cabaret singer Trilby

hundred years ago, they realised that subjects in the trance state could be made to obey every command. But more important, in the course of their experiments they made two discoveries of great potential significance.

For a start, they found that if they told a subject, 'You will feel no pain,' he could be struck, pricked and even burned without so much as a yelp. The Mesmerists proceeded to demonstrate that pain-free surgical operations could be performed under hypnosis – and this was before the invention of anaesthetic drugs.

The medical profession refused to accept the evidence. When distinguished surgeons were invited to watch the amputation of a leg under hypnosis, they insisted the man was only pretending to feel no pain! Hypnosis, they argued, was occult; it could not work.

The second discovery was that some hypnotised subjects enjoyed talents they did not know they had in their ordinary lives. One might draw well under hypnosis; another sing melodiously (there was at least a grain of truth in du Maurier's story). A few appeared to become clairvoyant, describing places or events that they could not have seen. This, too, was dismissed as occultism. And to this day, hypnotism has never quite rid itself of its reputation of lying beyond the boundaries of orthodox science.

Yet we know now that the Mesmerists' claims were largely justified. Endless demonstrations have shown that a subject under hypnosis can put his finger into a candle flame and if told he will feel no pain, will feel no pain. Even more remarkable, if told he will have no blister, no blister appears.

Researchers have taken this further. If a hypnotised subject is told that he is going to be touched with a red-hot skewer, not only will he cry out in pain even if the skewer is cold, its touch will raise a blister.

A case for reincarnation?

Scepticism about the possibility that some subjects become clairvoyant under hypnosis has also been shaken by recent research into hypnotic regression. It has long been known that hypnotised subjects can be escorted back in time to earlier occasions in their lives. Asked to recall what they were doing on, say, New Year's Day 10 or 40 years ago, they will describe in detail episodes they have long since forgotten – and where it has been possible to check their stories, these have been found to be accurate. In the United States, the police have been exploiting this faculty by asking witnesses of crimes and accidents to allow themselves to be hypnotised to find out whether they can recall, say, the number of a stolen car which they did not consciously note at the time the event was taking place.

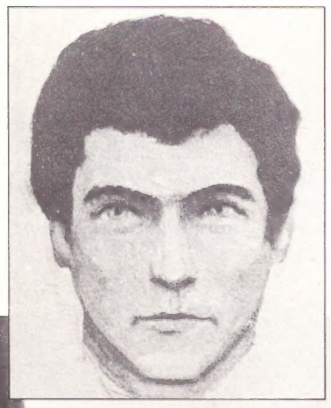
Hypnotic regression has been carried further. A hundred years ago researchers on the Continent found that some hypnotised subjects appeared to be able to recall events from past centuries. Recently this line of investigation has been taken up again, and the results described in detail in works like Jeffrey Iverson's *More lives than one*, an account of Arnall Bloxham's investigations, and Joe Keeton's *Encounters with the past*.

It remains to be established whether the hypnotised subjects are regressing to their own past lives, or tuning in to what might be described as a videotape from the collective unconscious, but it seems clear they are genuine; the material, even if not accurate in detail, is being picked up from sources other than books and conversations.

Hypnosis, then, is a trance state, or altered state of consciousness (some people prefer to describe it as a state of altered *awareness* of consciousness) in which certain faculties and

Right: the French hypnotist Oudet extracts a tooth after having put his patient into a trance, 14 November 1836. Although doctors at first regarded the idea of using hypnosis as an anaesthetic with suspicion, they were soon using it in a wide range of operations

Below: Dr Malcolm Rawson, chief neurologist at Hull Royal Infirmary, questions 13-year-old Gail Rogers after putting her in a hypnotic trance. Police used hypnosis to try to cast light on the mysterious disappearance of Genette Tate, also aged 13, who vanished while delivering evening papers on Friday, 18 August 1978 in her home town of Aylesbeare in Devon. The oil painting (inset) was produced by an artist from descriptions given by Gail and her mother, Mrs Matilda Rogers, under hypnosis, and for a time police were hopeful it might give them a lead. By mid-1980, however, the case remained unsolved



abilities can be liberated. Clearly the potential benefits, for anybody prepared to master the art of auto-hypnosis, can be considerable. Why, then, is more use not made of it?

Fear is partly responsible; the lingering fear that hypnosis is in the occult category and not scientifically respectable, or the more reasonable fear that to undergo it is to put oneself into the hands of a Svengali.

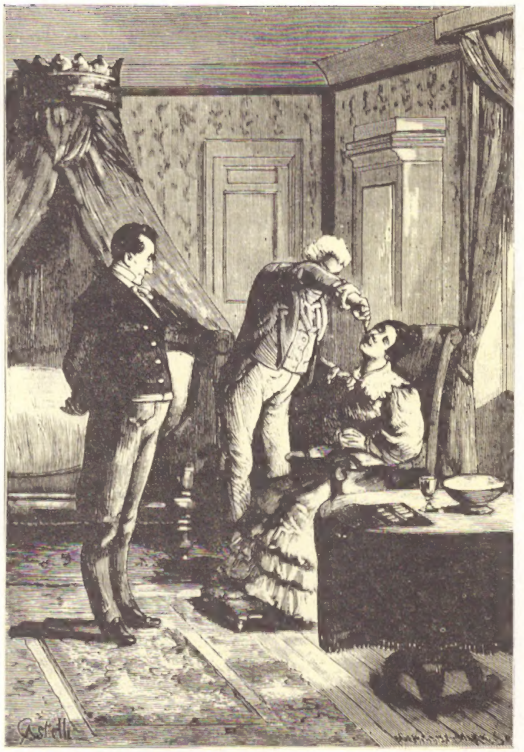
Yet the fact that a stage hypnotist can so easily manipulate volunteers is misleading. The volunteers know it is a game. They choose to play it, presumably out of curiosity in most cases; they would not volunteer if they thought they might be made to do something dangerous or criminal – or even immoral, by their standards.

A celebrated experiment demonstrated this a century ago. A girl subject taking part in an experiment in Paris was told to kill one of the students; she appeared to try to do so and had to be restrained. Yet when asked to take off her clothes, she blushed, came out of her trance and ran from the room.

In the experiment she must have sensed, in some way, that she would be prevented from doing anything dangerous or criminal, so she could put on an act. But to have undressed would have compromised her own moral code and was therefore unacceptable.

The implications of hypnosis for medicine are striking, yet until very recently they have been largely ignored. It is only in the past 10 years that the results of research into hypnosis have been confirmed and amplified with the help of investigations involving biofeedback. These have shown how individuals can control many bodily functions – heartbeat, blood pressure, gastric secretions – by auto-suggestion: self-hypnosis.

And hypnosis, or auto-suggestion, can do much more. Individuals like the American Jack Schwartz have demonstrated how they can control bleeding, staunching the blood flow as if by turning off a tap. Much the simplest way to remove warts and other skin



blemishes is by suggestion under hypnosis. It can also be a help in curing allergies and in stopping smoking (though good hypnotherapists emphasise that they can only help those who want to help themselves).

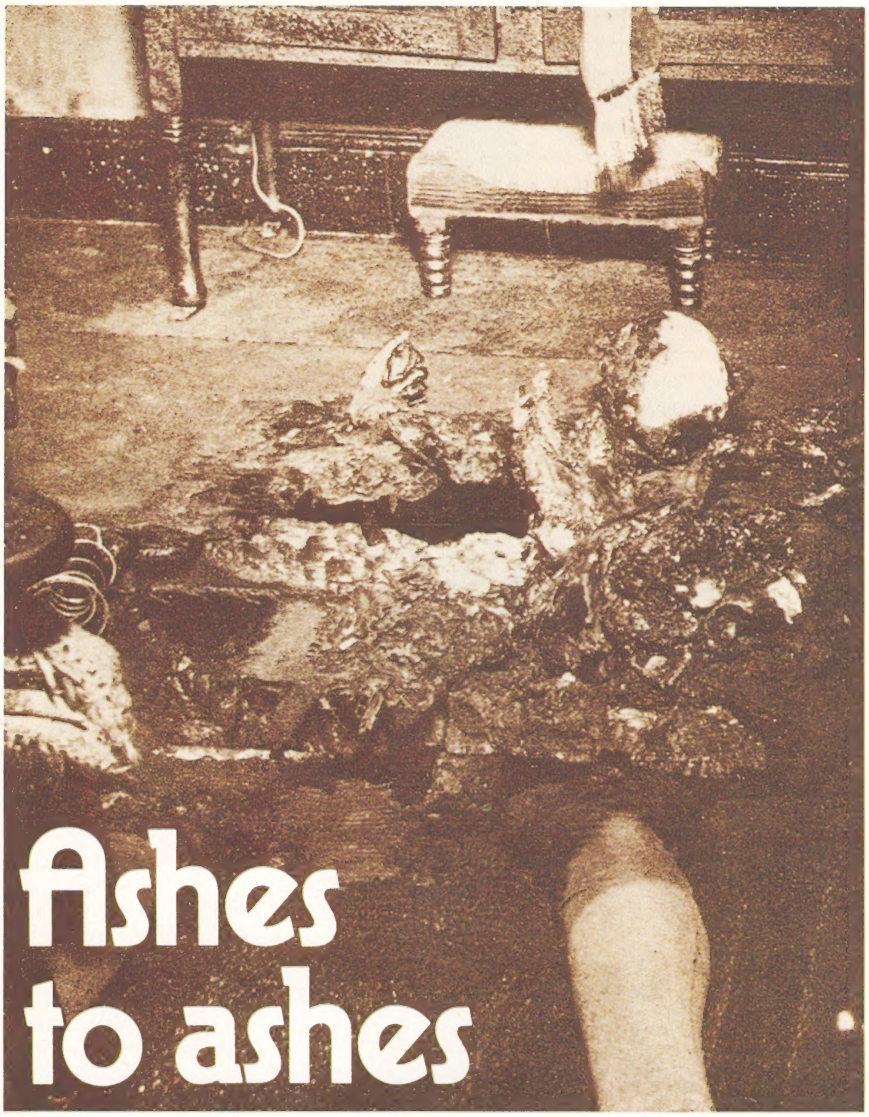
The distinguished Australian psychiatrist Ainslie Meares and Americans Carl and Stephanie Simonton have shown how hypnosis and auto-hypnosis can be used to help terminal cancer patients, not merely by enabling them to control pain, but also by giving them a welcome distraction from their worries. In some cases this has prolonged survival; in a few, X-rays have revealed actual regression of tumours. No false hopes are raised of miracle cures, as has so often happened with other forms of cancer treatment. Patients are told that it is how they react to their own voyages of discovery in altered states of consciousness that counts.

Hypnotherapy has two major advantages. It can be taught, so that patients can learn to control, for instance, their own headaches – sometimes even prevent them. And it costs nothing, except the practitioner's time.

Outside the medical field, too, the possibilities of hypnosis are just beginning to be appreciated, particularly by sportsmen. Post-hypnotic suggestion can send a golfer out onto the course in a relaxed frame of mind – which in golf is half the battle.

The nature of hypnosis remains unexplained, but it is clear from the research that has been done that altered states of consciousness can provide fascinating insights into the human mind as well as enabling us to heal our own minds and bodies.

Hypnosis has provided startling new evidence that reincarnation does occur. See page 54



Ashes to ashes

Of all the strange and inexplicable fates that may befall a person, perhaps the most bizarre is to burst into flames without warning and without apparent cause. BOB RICKARD describes cases that still defy science

PEOPLE HAVE LONG BELIEVED that in certain circumstances the human body can burst into flames of its own accord. Flames, furthermore, of such ferocity that within minutes the victim is reduced to a heap of carbonised ashes. This idea – some call it a superstition – has been around for centuries, smouldering in the belief in divine retribution. 'By the blast of God they perish,' says the author of *Job*, 'and by the breath of his nostrils are they consumed.'

This Gothic horror was hugely popular in the 18th and 19th centuries, and its literary use is still extensively discussed in the pages of *The Dickensian*, stimulated by Charles Dickens' own fascination with the subject. Dickens had examined the case for spontaneous human combustion (SHC) 'as a Judge might have done', and knew most of the early authorities and collections of cases. He probably based his description of Krook's death in *Bleak House* (1852–3), upon the cases of Countess Bandi and Grace Pett.

The aftermath of spontaneous human combustion. The fire has reduced most of the body to ashes, leaving only parts of the lower legs, the left hand and portions of the skull, and was intense enough to burn a hole in the floor. Enormously high temperatures must have been involved, yet for some mysterious reason the fire has been contained, causing little further damage to the surroundings

The death of the 62-year-old Countess Cornelia Bandi, near Verona, is perhaps one of the first of the more reliable reports of SHC. According to a statement by Bianchini, a prebendary of Verona, dated 4 April 1731, the Countess had been put to bed after supper, and fell asleep after several hours' conversation with her maid. In the morning the maid returned to wake her and found a grisly scene. As the *Gentlemen's Magazine* reported: 'The floor of the chamber was thick-smear'd with a gluish moisture, not easily got off . . . and from the lower part of the window trickl'd down a greasy, loathsome, yellowish liquor with an unusual stink.'

Specks of soot hung in the air and covered all the surfaces in the room, and the smell had penetrated adjoining rooms. The bed was undamaged, the sheets turned back, indicating the Countess had got out of bed.

> Four feet [1.3 metres] from the bed was a heap of ashes, two legs untouch'd, stockings on, between which lay the head, the brains, half of the back-part of the skull and the whole chin burn'd to ashes, among which were found three fingers blacken'd. All the rest was ashes which had this quality, that they left in the hand a greasy and stinking moisture.

A hole burnt in the floor

Bianchini could have been describing some of our modern cases. The diligent researches of Larry E. Arnold unearthed the fate of Dr J. Irving Bentley, a 93-year-old retired physician of Coudersport, Pennsylvania. Gas company worker Don Gosnell discovered the remains after smelling a 'light-blue smoke of unusual odor'. The fire had been so intense that it almost totally consumed the old man. John Dec the deputy coroner said: 'All I found was a knee joint atop a post in the basement, the lower leg from the knee down, and the now-scattered ashes 6 feet [2 metres] below.' And yet the fire had, mysteriously, been contained; firemen testified to the existence of a few embers around the hole, and a slight scorching on the bathtub about a foot (30 centimetres) away was the only other sign of this fiercely fatal fire. The burns on the bath were still visible when Arnold investigated nine years later.

It was suggested that Bentley was a careless smoker – small burns riddled his everyday clothes and the bedroom floor – and that he had wakened to find himself on fire, struggled to the bathroom in search of water, and there collapsed and died. Arnold, in his report on the case in the journal *Pursuit*, 1976, points out that there are several inconsistencies in this account, though it was accepted by the local newspaper and the coroner.

Bentley's pipe had been 'carefully placed' on its stand by his chair; not the action of a

man on fire. A broken hip six years before had left him with no feeling in his left leg, and he walked with difficulty – his 'walker' can be seen fallen across the hole. He was enough of a doctor to realise that his only chance of survival, had his clothes been on fire, would be to take them off there and then, rather than risk the precarious trip to the bathroom.

It is more likely that whatever happened to Bentley occurred when he visited the bathroom for some other reason, and that he was beginning to burn before he took off his robe, setting fire to it in the process – it was found smouldering in the bathtub. The autopsy was a mere formality, yet despite having so little to go on – just half a leg; the ashes were never analysed – the coroner decided that Dr Bentley had died of *asphyxiation*, probably because that is the usual cause of death during fires.

Primarily due to the efforts of Charles Fort, the pioneer collector of accounts of strange phenomena, and the small number of people and journals who continue his work, we have accumulated a respectable number of records, from newspapers and medical journals, of SHC right up to the present. Very few of the accounts mention SHC, because officially there is no such phenomenon, and coroners and their advisers have the unenviable task of dealing with evidence that seems to contradict accepted physical laws and medical opinion. Inevitably, suppositions are made about knocked over heaters, flying sparks, careless smoking, and in the case of child victims, playing with matches. Faced with the alternative – a nightmare out of the Dark Ages – it is not surprising that they are accepted.

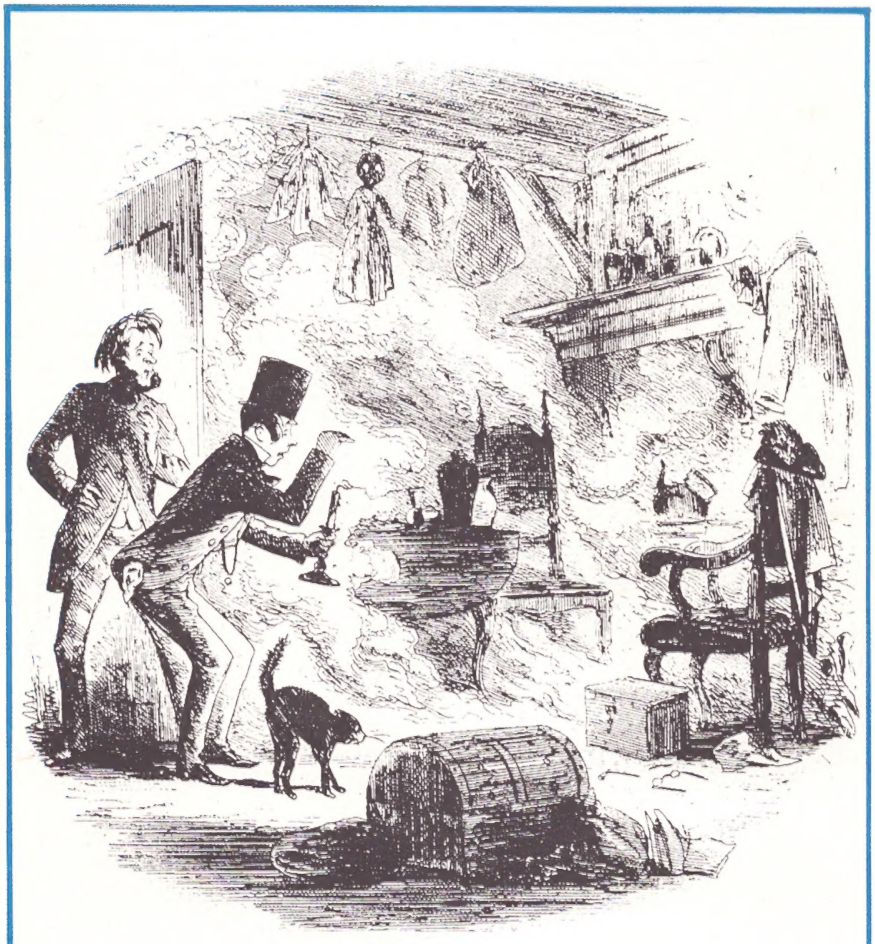
There are occasional exceptions, which are far more useful to those who truly wish to solve the enigma, like the report in *Lloyds Weekly News* of 5 February 1905. A woman asleep by a fireplace woke to find herself in flames and later died. The honest coroner said he could not understand: the woman had gone to sleep facing the fire, so any cinder that shot out from the grate would ignite the front of her clothes. Yet it was her back that bore the severe burns.

Fear of the truth

At worst, a story may be rejected out of fear or disbelief, as in the case of the elderly spinster, Wilhelmina Dewar, who combusted near midnight on 22 March 1908, in the Northumberland town of Whitley Bay. Wilhelmina was found by her sister Margaret who, in a shocked state, managed to summon her neighbours. In the house they found the severely charred body of Wilhelmina in an upstairs bed. The bedclothes were unscorched and there was no sign of fire anywhere else in the house.

When Margaret told this story at the inquest, the coroner thought it preposterous and asked her to think again. Repeatedly she said she was telling the truth and could not change her story – even after a policeman testified that Margaret was so drunk she couldn't have known what she was saying. As Fort points out, the policeman 'was not called upon to state how he distinguished between signs of excitement and terror, and intoxication.' The coroner adjourned the inquest to give her more time to think. When it was reconvened a few days later it was obvious that a great deal of pressure had been placed upon poor Margaret.

Both sisters were retired school teachers and, up until then, lived respectably. Now the coroner was calling her a liar, the papers called her a drunk, and friends and neighbours turned away, leaving her to face a



A villain meets his end

In chapter 32 of *Bleak House*, Charles Dickens' characters, William Guppy and Tony Weevle, discover that the evil Krook has been mysteriously burned to a few charred lumps and ashes, filling the room with 'hateful soot' and objects coated with an offensive 'thick yellow liquor'. 'Call the death by any name . . . attribute it to whom you will, or say it might have been prevented how you will, it is the same death eternally – inborn, inbred, engendered in the corrupt humours of the vicious body itself, and that only – Spontaneous Combustion, and none other of all the deaths that can be died.'

hostile court. Not surprisingly, she said she had been inaccurate. This time she told a story of finding her sister burned, but alive, in a lower part of the house. Then she helped her upstairs to bed, where she died.

This sounded superficially more plausible, was accepted, and the proceedings promptly closed. The court was not interested in how Wilhelmina was transformed from someone who could be helped upstairs into the cindered corpse with charred abdomen and legs; or how, if she continued to smoulder after being helped into bed, there was no mark of fire in the house. 'But the coroner was satisfied,' wrote Fort sarcastically. 'The proper testimony had been recorded.'

Yet it was medico-legal interest that kept alive the notion of SHC, with pathologists endorsing the phenomenon, than rejecting it in favour of 'preternatural combustibility'. In addition, there was the perennial possibility that a murderer may simulate SHC to hide his crime. One of the earliest test cases occurred in Rheims in 1725 when an innkeeper, Jean Millet, was accused of having an affair with a pretty servant girl and killing his wife. The wife, who was often drunk, was found one morning about a foot (30 centimetres) away from the hearth.

'A part of the head only, with a portion of the lower extremities, and a few of the vertebrae, had escaped combustion. A foot and a half (45 centimetres) of the flooring under the body had been consumed, but a kneading-trough and a powdering tub very near the body sustained no injury.' A young assistant doctor, named Le Cat, was staying at the inn and managed to convince the court that this was no ordinary fire death but a 'visitation of God' upon the drunken woman, and an obvious result of soaking one's innards with spirits. Millet was vindicated, and Le Cat went on to qualify with distinction, and publish a memoir on SHC.

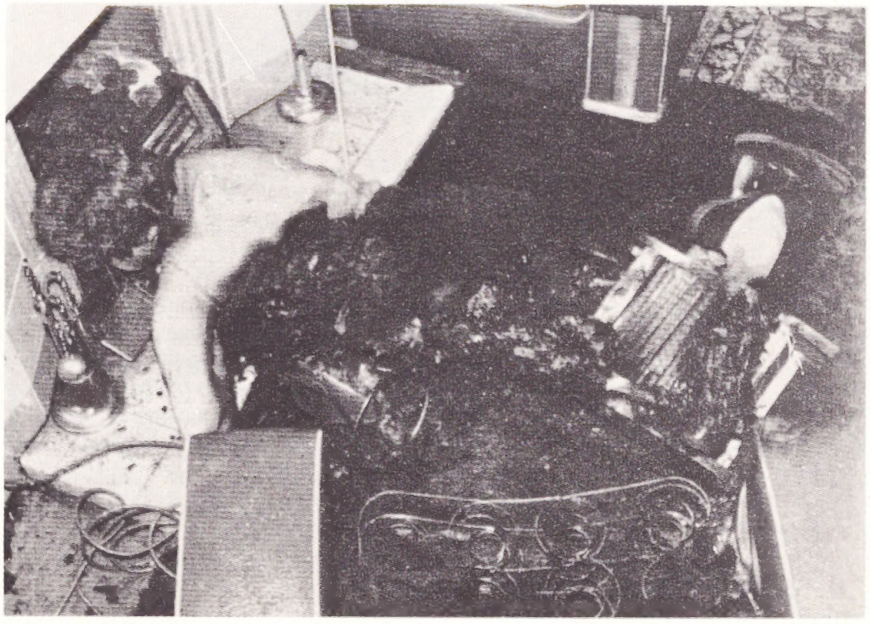
Spontaneous human combustion received its severest criticism from the great pioneer chemist, Baron Justus von Liebig, who wrote a spirited refutation of both spontaneous and preternatural combustion, on the grounds that no one had seen it happen. As a scientist he saw the historical evidence as an unsupported record of the *belief* in SHC, rather than actual proof of spontaneous burning deaths. Further, he lamented the lack of expert witnesses, and dismissed the accounts generally because they 'proceed from ignorant persons, unpractised in observation, and bear in themselves the stamp of untrustworthiness.'

Despite Liebig's assertion, however, there is plenty of evidence from both medical and police sources. Many of these bear witness to the ferocity of the phenomenon, as in the case investigated by Merille, a surgeon in Caen, recorded in Trotter's *Essay on drunkenness* (1804). On 3 June 1782, Merille was asked by 'the king's officers' in the city to report on the death of Mademoiselle Thaurs, a lady of over 60 who had been observed, that day, to have drunk three bottles of wine and one of brandy. Merille wrote:

> The body lay with the crown of the head resting against one of the hand-irons . . . 18 inches [45 centimetres] from the fire, the remainder of the body was placed obliquely before the chimney, the whole being nothing but a mass of ashes. Even the most solid bones had lost their form and consistence. The right foot was found entire and scorched at its upper junction; the left was more burnt. The day was cold but there was nothing in the grate except two or three bits of wood about an inch in diameter, burnt in the middle.

Dr Wilton Krogman, who investigated a famous case of SHC, and experimented with

Left: the great chemist Baron Justus von Liebig. He rejected tales of spontaneous human combustion because of the lack of expert witnesses – and because his attempts to make flesh burn with the same intensity as SHC were, without exception, a dismal failure



Below: an anonymous victim of SHC lies with its apparently unburnt head resting in a grate. An electric fire is also visible – but how did the body burn so thoroughly without setting fire to the rest of the room?

The burning of Dr Bentley

Dr J. Irving Bentley, a retired physician, lived on the ground floor of an apartment building in Coudersport, northern Pennsylvania. On the cold morning of 5 December 1966, Don Gosnell entered the building's basement to read the meter for the North Pen Gas Company. In the basement a 'light-blue smoke of unusual odor' hung in the air. Scattering an unfamiliar heap in the corner with his boot, Gosnell found it was ashes. There had been no answer to his greeting on the way in, so he decided to look in on the old man. There was more strange smoke in the bedroom but no sign of Bentley. Gosnell peered into the bathroom and was confronted with a sight he will never forget. A large hole had burned through the floor to the basement, exposing the joists and pipework below. On the edge of the hole he saw '. . . a brown leg from the knee down, like that of a mannequin. I didn't look further!' Gosnell fled from the building.

sophisticated crematorium equipment, said: 'Only at 3000°F (1500°C) plus have I seen bone fuse or melt so that it ran and became volatile.' Such a heat would certainly char everything within a considerable radius and set the house ablaze, yet the meticulous Merille writes:

> None of the furniture in the apartment was damaged. The chair on which she was sitting was found at the distance of a foot from her, and absolutely untouched . . . the consumption of the body had taken place in less than 7 hours, though according to appearance, nothing around the body was burnt but the clothes.

Reluctant admissions

Modern researchers into SHC readily quash the idea that the phenomenon is as rare as some commentators suggest. Similarly, there is a growing number of cases testified to by doctors and pathologists, and this number would probably increase if the fear of ridicule could be completely removed. A Dr B. H. Hartwell reported to the Massachusetts Medico-Legal Society an unusual case of SHC that he witnessed while driving through Ayer, Massachusetts, on 12 May 1890.

He was stopped and called into a wood where he saw a horrible sight. In a clearing a woman was crouching 'in flames at the shoulders, both sides of the abdomen, and both legs.' Neither he nor the other witnesses could find an obvious cause for the fire.

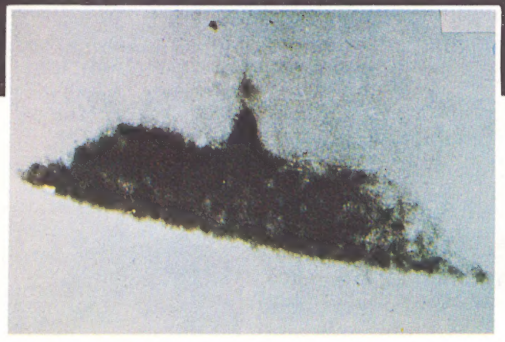
This doctor's experience was not unique. Support for the suspicion that many a doctor would be able to tell of an encounter with mysterious and fatal fires comes in a coincidental and roundabout way. Maxwell Cade and Delphine Davis, authors of the imaginative study of ball lightning *Taming of the thunderbolts* (1969), confessed they themselves would not have put much faith in the above story, or in the existence of SHC, 'if a doctor friend had not told us of a lecture which he attended at the Massachusetts Medico-Legal Society, where several such cases were discussed. When we expressed cautious doubts, the doctor assured us that he had been called to a similar case himself as recently as the autumn of 1959.'

When Dr D. J. Gee of the University of Leeds delivered his well-known paper on 'A case of spontaneous combustion' he was surprised by the candid discussion that followed. He is quoted as saying:

> Dr George Manning described his experience of several similar cases, and indicated that the phenomenon was certainly not as rare as might be supposed from the literature. This view was supported by Dr David Price, who said that he met with this phenomenon approximately once in every four years.

For a closer look at the many peculiar and frightening aspects of SHC, see page 46

UFO Photo File



At about 7.45 p.m. on 11 May 1950 at his farm close by the Salmon River Highway, about 10 miles south-west of McMinnville, Oregon. Paul Trent and his wife claimed they saw a UFO – and took a photograph of it which has still not been proved a fake.

Mrs Trent was in the yard on the south side of the house feeding the rabbits when she saw, to the north-east, moving westwards, a disc-shaped object. She called her husband, who was inside the house. When he realised the unusual nature of the object in the sky, Mr Trent ran to his car for his camera, but his wife remembered that he had left it in the house and hurried to fetch it. The camera already had a partly used film in it.

The object was tilted up a little as it approached, and appeared bright and silvery; it made no noise, and the Trents saw no smoke or vapour. Mr Trent took a picture (*above*) and wound on ready for the next frame, moving to the right to keep the object in the viewfinder, and taking a second shot some 30 seconds after the first. Mrs Trent said the object seemed to be gliding, with no rotating or undulating motion. It moved off westwards and 'dimly vanished'.

The couple said there was a 'breeze' as the object tilted before flying overhead. Mr Trent estimated its diameter as 20 or 30 feet (6 or 9 metres).

A few days later, when he had used up the remaining frames, Mr Trent had the film developed locally. He mentioned the incident to only a few friends. He did not seek publicity, telling his friends he didn't want to be 'in trouble with the government'. However, a reporter from the local *McMinnville Telephone Register* heard of the sighting from two of Mr Trent's friends; he followed it up and found the precious negatives on the floor of the Trents' house, under a writing desk where the Trent children had been playing with them! The *Telephone Register's* story appeared on 8 June 1950. On 9 and 10 June newspapers in Portland, Oregon, and in Los Angeles ran the story, and *Life* magazine carried the photographs a week later.

None of this publicity had been sought by the Trents. When, 17 years after the sighting, they were visited by an investigator from the US Air Force-sponsored Colorado University Commission of Enquiry (whose findings were later published as the Condon Report) he found them completely unchanged by their experience, well liked locally and known as reliable.

The McMinnville UFO (above left) is remarkable for its similarity to an object (above right) seen and photographed from an aeroplane by a French Air Marshal near Rouen, France, in March 1954.

After submitting the photographs to rigorous scientific examination the Condon investigation was forced to admit they might be genuine. The official report concluded: 'This is one of the few UFO reports in which all factors investigated, geometric, psychological and physical appear to be consistent.'

One warm, clear afternoon in early April 1966, Mr Brown (he wishes his real name to remain secret) was in his garden in Balwyn, near Melbourne, Australia, when it suddenly 'lit up' and he saw in the sky a bright object, shaped like a mushroom (left), about 20 to 35 feet (6 to 10 metres) in diameter. It was about 150 feet (50 metres) from the ground and seemed to float down towards him, spinning through a 180° angle on its vertical axis, 'during which time I photographed it'. It then shot off northwards at high speed. A carpenter working in the house witnessed the object and saw Brown photograph it.

Mr Brown is a qualified engineer, director of a large family business, and is a respected citizen of Balwyn. It is difficult to believe he would perpetrate a hoax. And yet an American UFO organisation, Ground Saucer Watch Inc., of Phoenix, Arizona, has recently cast doubt on the authenticity of the photograph. Using computer techniques to analyse the photograph, GSW has claimed it is a fake. And yet GSW has often been wrong in the past. Who is right? It is a question that is impossible to answer.

A promotional photograph of a B-57 aeroplane in flight (below) found its way into a set of UFO photographs offered for sale by NICAP (National Investigations Committee on Aerial Phenomena). An unknown object appeared in the top right-hand corner of the photograph. According to UFO investigator Robert Schmidt, the object 'appeared to be streamlined, and to have dark "ports" on its lower periphery.'

Schmidt wrote to the manufacturers, the Martin Aircraft Company, asking for a bigger enlargement (inset left) from the NICAP file. When questioned about the picture, the company replied that the unexplained image had been caused by a tear, a rub or an abrasion. Analysis, however, subsequently showed that in the original negative the emulsion grain extended over the area of the unknown object; a tear or rub would have destroyed the grain.

The Martin Company also said they had filmed another 'fly-by' to see if the same effect could be obtained again – a strange thing to do if, as they claimed, the original image had been caused by a flaw in the film.

Black holes: Where time stops, space collapses

Black holes can turn everything we know about reality on its head: infinitely dense, they warp space and time, and they may even connect directly with other, alternate universes. Yet, as NIGEL HENBEST shows, these enigmatic objects seem to evolve naturally from heavy stars

A BLACK HOLE is quite literally a hole in the fabric of space, torn from our Universe by a star collapsing in on itself. It is a region into which matter has fallen and from which nothing, not even light itself, can escape. Within the black hole, there is no up or down; no left or right. Time and space have changed roles with one another.

Just as we on Earth cannot help but travel forward in time, so any space traveller unfortunate enough to fall into a black hole would be sucked into the centre by an infinite density and crushed out of existence. Around the black hole itself is left a gaping hole, a few miles across, where space *does not exist*. Here, the pull of gravity is stronger than anywhere else in the Universe. Nothing can ever escape from it.

Both the theory of black holes and the evidence for their existence are products of 20th century science. But, surprisingly, the first prediction of black holes was made in 1798 by the French astronomer Pierre Laplace. In his *Exposition du systeme du monde*, Laplace proposed the startling and contradictory theory that the most luminous stars might in fact be invisible.

Laplace derived this conclusion from Newton's law of gravitation. If a star had the same density as the Earth, Laplace argued, it would be so massive that its surface gravity would prevent light from escaping. Since such heavy stars should produce a lot of light, Laplace concluded that the most brilliant stars were invisible.

In his idea of strong gravity preventing light from escaping, Laplace anticipated current astronomical thinking. But in other ways, Laplace was quite wrong. The modern view is that stars as heavy as those described by Laplace cannot exist in reality. Astronomers now think that black holes are formed not by the massive explosion predicted by Laplace, but by a cataclysmic *implosion* – matter being dragged inwards and compressing to an incredible density.

But the main source of contemporary research and knowledge of black holes was provided not by Laplace but by Albert Einstein. In his *General theory of relativity*, published in 1916, Einstein replaced Newton's 'force' of gravity with an entirely new concept of time and space 'warps' (see p. 42). Subsequent measurement and experimentation seem to have confirmed Einstein's theory, with profound results for black hole theory. With Einstein's view of the Universe, astronomers are now confident in being able to calculate their way around – and into – a black hole.

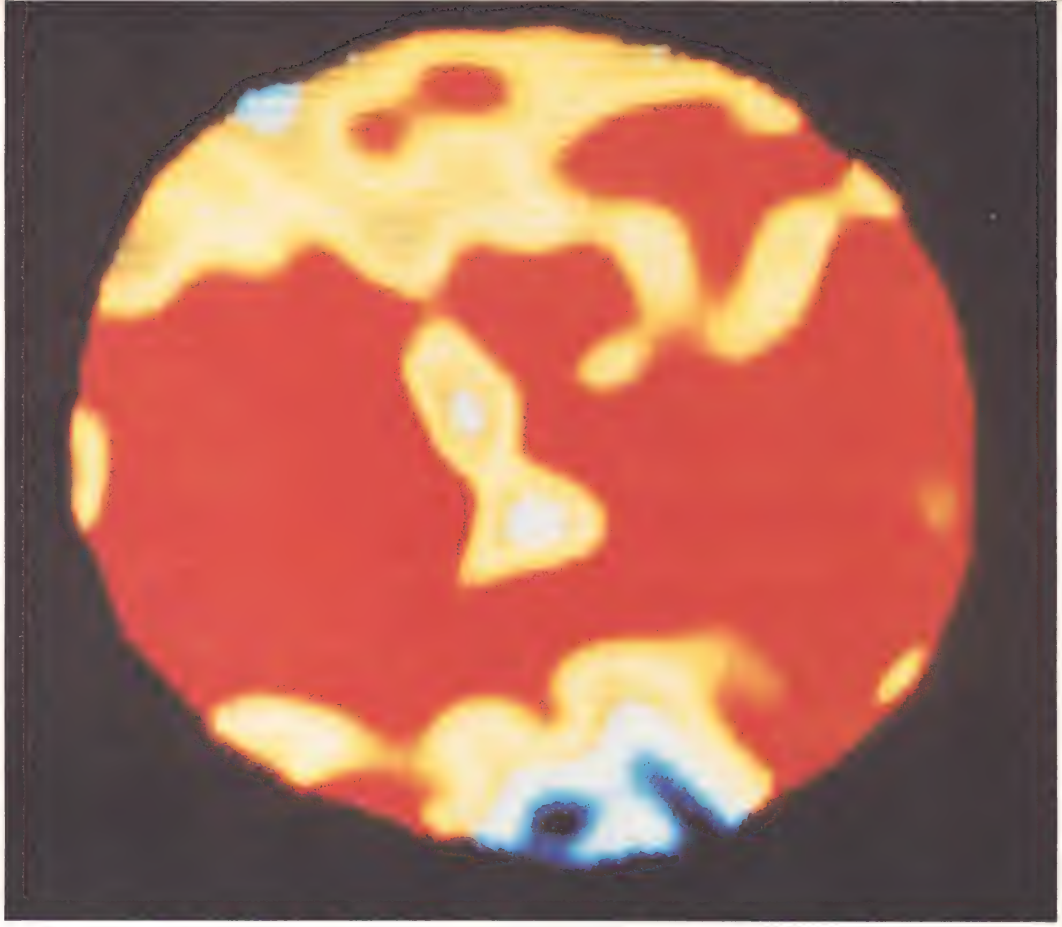
Using Einstein's equations, the German astronomer Karl Schwarzschild produced a general description of black holes only months after publication of the general

Left: the cluster of stars known as Hercules X-1. Star clusters are tightly-packed collections of millions of individual stars

Below: the spiral galaxy M51, similar in shape to our Milky Way. Galaxies are composed of millions of stars, many like our Sun, many with their own planets. The Universe contains tens of thousands of galaxies

Right: a red giant. In 5000 million years the Sun will become a red giant, 100 times its present size, engulfing Venus and Mercury and burning up all life on Earth

Below right: Sirius B, a white dwarf, some nine light years from Earth. Our Sun will end its long life as a white dwarf, 6000 million years from now

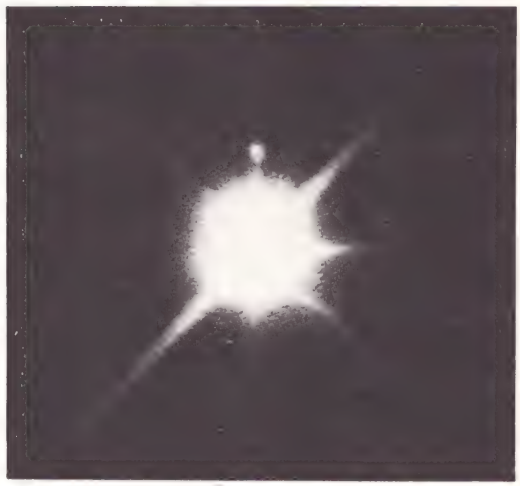


theory. At the time, however, no one could conceive of such strong gravitation as predicted by Schwarzschild. His calculations lay in obscurity, collecting dust. But by 1939 American physicists J. Robert Oppenheimer ('father of the atom bomb') and H. Snyder calculated that black holes could form at the heart of a massive implosion of a star.

But black holes were still not taken seriously by the astronomical establishment. Even if they did exist, how could we ever know? How could you possibly detect an entirely black, extremely small object millions of miles away? It seemed that no new advances in black hole theory were possible. Then, in the 1960s and 1970s, thanks to the advances made in radio-astronomy, strange objects were seen on the fringe of the Universe that put astronomy in a turmoil and led to the resurrection of black hole theory.

Using radio and x-ray techniques, astronomers spotted objects that emitted huge amounts of radiation, but no light. And although black holes cannot emit radiation themselves, they may capture streamers of gas which wrap themselves around a black hole in a rotating disc before being sucked into the hole. Caught in the intense gravitation near the hole, the gas becomes hot and turbulent and its energy may shine out as radiation. Astronomers now think that some celestial x-ray sources consist of a black hole pulling gas off a companion star. Quasars – quasi-stellar objects were thought to be huge black holes capturing gas in the centre of a whole galaxy of stars.

Schwarzschild had assumed that if black holes do exist they would not rotate. But all



real stars do rotate, and as a dying star collapses to a black hole, it should spin round even faster. What was the explanation?

One of the most important contributions to black hole theory in recent years has been the work of New Zealand mathematician Roy Kerr. Calculations based on Einstein's theory convinced Kerr of the existence of 'rotating black holes'. Although the collapsed star's matter ends up as a central point, the space around it is still distorted, curved, by its original rotation. Kerr found that there is a region surrounding the hole where matter is dragged around by virtue of the hole's rotation.

Kerr's work on rotating black holes was further elaborated by Oxford mathematician Roger Penrose. Although some mathematicians have thought that the collapsed point-like star can sometimes be visible, Penrose

suggested that such a 'naked singularity' is always decently 'clothed' by a surrounding black hole that keeps its light from reaching the Universe beyond.

Other important work on black hole theory was done by Stephen Hawking, of Cambridge – described as the man who has contributed more to our understanding of gravity than anyone since Einstein himself. Hawking revealed his most amazing result in 1974: black holes are very slowly evaporating away.

In practice, Hawking's evaporation mechanism is far too slow to affect black holes formed from collapsed stars. But it is very important for smaller holes. If black holes, the size and density of small hills, had formed when the Universe began some 15,000 million years ago, they should evaporate so fast that they are now 'exploding' in a burst of energy. Astronomers have looked for such explosions, but failed to detect them. This, however, is not a refutation of Hawking's theory; it just means that there were few such holes created in the early Universe.

But with evidence for star-mass black holes, astronomers are on firmer ground. Astronomers now think the heaviest stars in the Universe must end their lives by swallowing themselves up in black holes.

Birth of a star

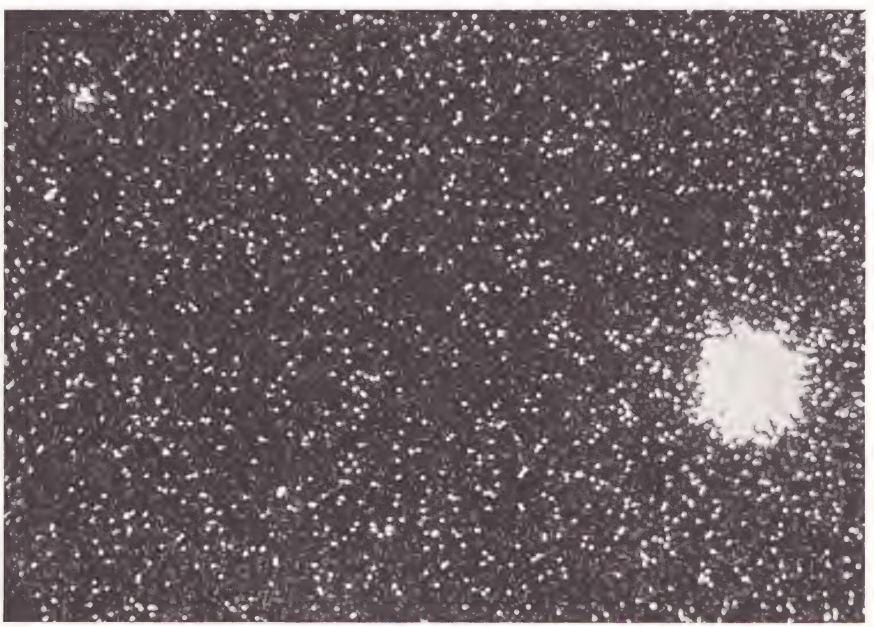
To understand how this happens we must begin with the birth of a star. Stars are formed in huge clouds of diffuse gas which come together under their own gravitational inpull. Near the centre, the turbulent gas becomes so dense that it breaks up into individual fragments – each of which becomes a new-born star. The result is a cluster of stars of different masses – ranging from one ten-thousandth the Sun's mass to 100 times heavier than our star.

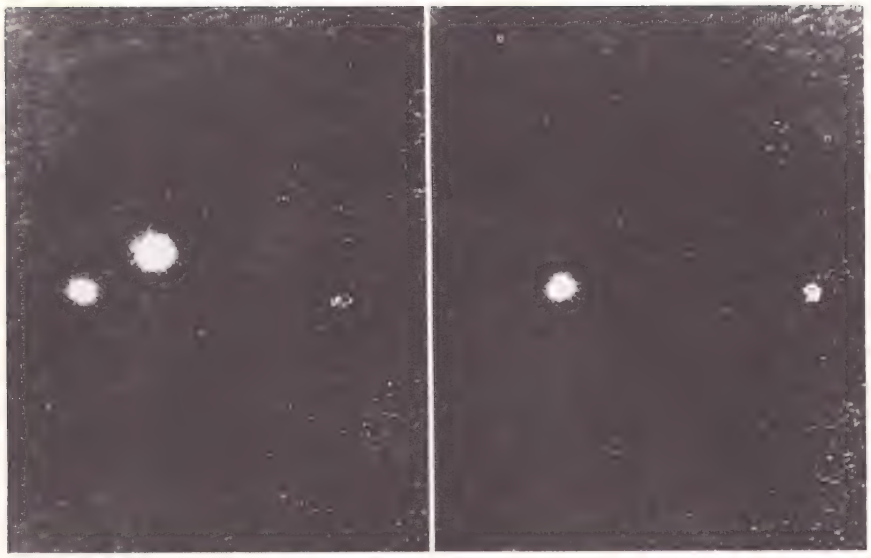
At first, the new-born stars light up the surrounding gas cloud (nebula), as we see in the Orion Nebula today. Eventually the gas cloud is blown away, and the cluster breaks up into individual stars. Our Sun, a typical star, was born this way 4,600 million years ago.

During a star's lifetime its core is a raging nuclear furnace, where hydrogen is continuously turning to helium – as in a hydrogen

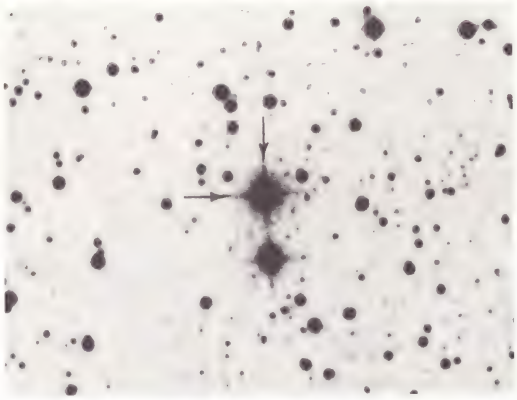
Above: new-born stars of Orion Nebula lighting up the surrounding gas cloud. Eventually, the nebula will break up to form individual stars

Below: an X-ray photograph showing some of the most distant objects in the Universe. The bright object, lower right, is quasar 2C278, about the size of Earth but with the brilliance of 100,000 million Suns





Above: the Crab pulsar. Pulsars are stars that spin rapidly in space emitting radio waves that are received on Earth as a flash or pulse every few seconds. In the picture above, the pulse is 'on', while the one next to it shows the pulse 'off'



Right: the recently discovered X-ray star Cygnus X-1. Some 6000 light years from Earth, Cygnus X-1 is thought to provide the best evidence for the existence of black holes. The arrowed star shows HDE 226868, a companion star three times the density of our Sun

bomb – and the nuclear energy released keeps the star shining. Eventually, though, the hydrogen at the centre will be replaced by spent helium 'ash'. Now the star must change. Its core shrinks, while its outer layers swell up enormously – to around a hundred times the star's previous size. When our Sun's central reactor becomes choked with helium, it will expand to become a red giant, engulfing Mercury and Venus in the process.

A star exists as a red giant for only a short period. Eventually it ejects its distended outer gas as a beautiful 'planetary' nebula (so-called because it resembles a planet's disc in a small telescope), while its core settles down as a small, very dense star, called a white dwarf. White dwarfs are very small, about the size of the Earth, one hundredth the Sun's present size, made of a 'gas' some million times denser than water.

Heavier stars live for a shorter time, for they consume their central hydrogen much more quickly. They have more chequered careers as red giants, too. The core of a heavy star can convert helium into other elements – carbon, silicon and iron in particular. But they too must die: blowing themselves apart in a vast supernova explosion, during which they outshine 1000 million Suns.

While the outer layers explode outwards, the central core of the supernova collapses inwards on itself. The subatomic particles (electrons and protons) within it amalgamate to make up neutrons. Because neutrons are much smaller than atoms, the resulting *neutron star* is tiny, smaller even than a white dwarf. Although a star, it is only 15 miles across – and so dense that a drop of matter from it would weigh over a million tons.

Many neutron stars spin rapidly, and send out beams of radio waves. When these sweep across the Earth, a radio telescope detects the star appearing to 'flash' or 'pulse' – just as a lighthouse seems to flash as the beam of light from its rotating lantern sweeps across our eyes. Radio astronomers at Cambridge discovered these flashing neutron stars in 1967, and labelled them *pulsars*.

Invisible corpse in orbit

Studying X-rays from space, astronomers have also found neutron stars in orbit around normal stars. Here, the compact neutron star pulls gas off its companion. As gas spirals down through the neutron star's gravitational field it heats up by friction, until it is hot enough to beam out X-rays, not light.

Satellites have revealed many of these unequal double acts, and astronomers studying the ordinary star's light in each case have found that it is indeed in mutual orbit about a star that can't be seen. Theory suggests that neither a white dwarf nor a neutron star can be heavier than three Suns; yet some stars associated with X-ray sources seem to have invisible companions heavier than this limit.

The best-known is Cyg X–1, an X-ray star in the constellation Cygnus. Uhuru, the X-ray detecting satellite, discovered that the radiation comes from the spiralling disc of gas which surrounds the unseen companion of a giant star (catalogued as HDE 226868). But the motion of the giant star, revealed by its light, shows that its companion is at least six times heavier than the Sun. Too heavy to be a neutron star (or a white dwarf), the invisible star in the Cyg X–1 system must be a black hole. Millions of years ago it must have been an ordinary but very heavy star, which lived its life in a rush, exploded as a supernova, and left its invisible corpse still in orbit about its companion HDE 226868. Streams of gas from the latter fall towards the black hole, and fleetingly emit X-rays before disappearing into the hole.

Half a dozen other X-ray sources have similar characteristics to Cyg X–1, and probably also harbour black holes. Indirect though the evidence is, most astronomers accept that these sources do indicate that black holes are not just a theorist's dream. Matter in our Universe can indeed collapse past the point of no return, and tear out of the structure of space a black hole – a hole that can perhaps lead out of our Universe altogether and into another.

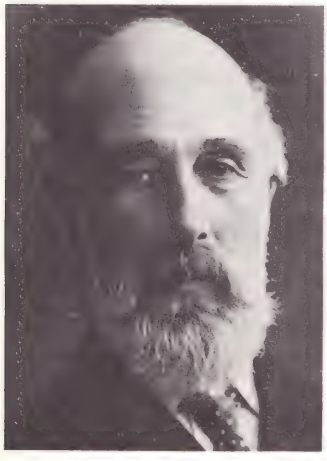
On page 41 we take you to the edge of a black hole and beyond – into other universes

Messages in the mind

Modern research has succeeded in actually recording the 'tuning in' of one mind to another. But, explains ROY STEMMAN, scientists still cannot tell us how telepathy works

Above: Douglas Dean, one of America's leading psychical researchers, using a plethysmograph to monitor blood volume. The machine shows that telepathic activity can actually increase blood volume

Below: Sir William Barrett (1845–1926), Professor of Physics at the Royal College of Science, Dublin, who was one of the first psychical investigators



EARLY ONE MORNING in 1980, a very frightened old lady walked feebly into a Barcelona police station. Senora Isabel Casas, an 81-year-old widow, had been so scared by a terrible dream that, despite her age and infirmity, she had managed to walk to the local police station to raise the alarm. Almost incoherent with fear, she told the officer on duty that she had seen the face of her friend and neighbour, Rafael Perez, 'twisted in terror' – and heard a voice say, 'They are going to kill us.'

The Spanish police were inclined to dismiss Senora Casas's experience as a mere nightmare. But they became curious when they learned that she had not seen Perez, the only other resident in the block of flats where she lived, for 10 days. Normally the 56-year-old chef called to see her every day, but he had written her a note saying he was going away for several weeks. It was odd, the police thought, that this note had not been delivered until three days after she had last seen her neighbour. And why had Perez not called to see her personally?

They decided to investigate and eventually found Perez tied up in a shed on the roof of the block of flats. He told them two men had broken into his apartment, made him sign 28 cheques so that they could draw his £15,000 life savings a little at a time, then forced him to write the letter to Mrs Casas so that her suspicions would not be aroused. Then they tied him up and said they would be back, once they had all the money, to kill him and his neighbour.

Astonishingly, the old woman seems to have picked up the thoughts of her friend as he waited in terror for his captors to return. His life was saved by her vivid telepathic dream – and the police ambushed and arrested the men when they returned to the scene of their crime.

This ability of one person to 'look into' the mind of another was one of the first subjects to be studied by the early psychical researchers a century ago.

The case of Canon Warburton

Typical of the spontaneous cases of telepathy investigated by early researchers was the experience of an English clergyman in 1883. Canon Warburton sat in an armchair in his brother's flat and began to doze. Suddenly, he woke up with a start exclaiming, 'By Jove! He's down!' The canon had just had a vivid dream in which he had seen his brother come out of a drawing-room on to a brightly illuminated landing, catch his foot on the edge of the top stair and fall headlong down the stairs, just managing to save himself from serious injury by using his hands and elbows. The house in the dream was not one he recognised. All the canon knew, having just

Above: Sir Oliver Lodge (1851–1940), who carried out psychical experiments with two girls who claimed to be able to read each other's minds. But later investigations have cast doubt on Lodge's results

arrived in London from Oxford, was that his brother had left him a note explaining that he had gone to a dance in the West End and would be back at about 1 a.m.

Recovering from the experience, Canon Warburton dozed off again for half an hour until his brother came in and woke him up. 'I have just had as narrow an escape of breaking my neck as I ever had in my life!' he exclaimed. 'Coming out of the ballroom, I caught my foot, and tumbled full length down the stairs.'

The canon's uncanny dream experience is one of many hundreds of equally impressive cases of spontaneous telepathy collected by the Society for Psychical Research in Britain and America.

The word 'telepathy' was coined in 1882 by a leading Cambridge scholar and investigator, F. W. H. Myers, and the first major study of such experiences – the *Census of hallucinations*, published in 1890 – examined replies to 20,000 questionnaires. But science needed to examine telepathy under more controlled conditions.

One of the pioneers of scientific research into telepathy was Sir William Barrett, professor of physics at the Royal College of Science, Dublin, who conducted experiments with hypnotised subjects that satisfied him that telepathy was real.

When Sir William submitted his paper, *Some phenomena associated with abnormal conditions of the mind*, to the British Association for the Advancement of Science, it was refused by the biological committee. He eventually presented it to the anthropological sub-section, where it was accepted only on the casting vote of its chairman, Dr Alfred Russell Wallace, who was also a keen investigator of psychical phenomena.

By the early part of this century many groups of researchers were involved in imaginative telepathy tests. In the 1920s Rene Warcollier conducted group telepathy experiments between France and the United States, many of which produced very impressive results. But not all early research is acceptable by today's strict scientific standards. The famous physicist Professor Oliver Lodge (later Sir Oliver Lodge) carried out tests with two girls who claimed to be able to read each other's minds. He found their demonstrations convincing and published them in 1909 in his book *The survival of man*. But since the girls were allowed to hold hands while 'sending' their telepathic images of playing cards, the possibility that they were using a code cannot be eliminated. This suspicion is reinforced by Lodge's statistics, which show that when the girls were not touching, results fell nearly to chance levels.

'Sinclair goes spooky'

In the 1930s the work of the well-known writer Upton Sinclair caught the public imagination. Sinclair's wife had considerable psychic abilities and was able to 'receive' by telepathy pictures that were drawn by her husband or other senders. Sometimes these experiments were carried out in adjoining rooms, at other times over long distances. Sinclair published his results in his book *Mental radio*, revealing that in 290 experiments Mrs Sinclair scored 23 per cent successes, 53 per cent partial successes and 24 per cent failures.

The similarity between the original drawings and Mrs Sinclair's 'copies' was often striking, ruling out coincidence, but making a statistical analysis of the results difficult. In fact, partial successes were often as impressive as direct hits because they gave an interesting insight into how Mrs Sinclair perceived the images. On one occasion, Upton Sinclair drew a volcano with billowing black smoke. His wife drew a very good likeness, but was unable to identify it and guessed that the smoke was a beetle. Had this been a telepathy test which required a verbal response, her description of a beetle would have been judged a miss. In fact, her drawing showed that she had picked up the image very accurately.

Sinclair, a committed socialist, was well aware that most intelligent people still regarded the phenomenon of telepathy with scepticism. Some of his socialist friends felt that his interest in ESP conflicted with their rationalist outlook on the world, and one of them attacked him in a newspaper article headed 'Sinclair goes spooky'.

All in the mind's eye

Pictures drawn by American novelist Upton Sinclair and their images 'received' telepathically by his wife Craig reveal a startling degree of similarity. In the first pair (left) Sinclair's original was of a volcano erupting. His wife interpreted it as a beetle – which, as Sinclair put it, 'hardly sounds like a triumphant success.' But in fact the billowing smoke looks very like a beetle's body in Mrs Sinclair's drawing, while the sides of the mountain can easily be interpreted as its antennae.

The second and third pairs of pictures need no explanation. Mrs Sinclair had difficulty, however, with her husband's drawing of a cow. She failed to identify it, but noted that she saw 'something sending out long lines from it.'

In the last pair of pictures Mrs Sinclair again failed to identify the target picture – but the similarity between the two drawings is striking. Her comment reads, 'May be elephant's snout – but anyway it is some kind of a running animal. Long thing like a rope flung out in front of him.'

It was to give the subject respectability in the eyes of science that Dr J. B. Rhine began to research telepathy in the laboratory. Rhine used new methods and easily identifiable targets – Zener cards – to ensure that there was no doubt whether a subject was scoring a hit or a miss in his tests. The results were impressive and satisfied Rhine and many other scientists that mind-to-mind communication was real.

But there were still sceptics, one of whom was the psychologist Bernard Riess. When Dr Rhine was invited to lecture about his ESP work at Barnard College, Riess questioned him so fiercely and in such a manner that Rhine protested he was, in effect, accusing him of being a liar. Instead of defending his own experiments, however, Rhine suggested to Riess that he should carry out his own tests, using all the controls he believed necessary. Riess's students urged him to accept the challenge and they found a young lady with psychic abilities who agreed to act as subject. For several months, Riess conducted his own card-guessing experiments with the girl. Seventy-four runs of 25 cards were made (1850 trials) and they averaged a phenomenal 18 hits out of 25.

Riess, once a denigrator of ESP research, was called upon to defend his experiment in 1938 when the American Psychological Association organised an ESP symposium. He told the meeting:

> There can be no criticism of the method used. I had the deck of cards on my desk, shuffled them, and at the stated time turned them over one by one, making a record of each card. I kept the records locked up in my desk and sometimes it was a week before I totalled up the scores and found the number of high scores she was making. . . . The only error that may have crept in is a possibility of deception, and the only person who could have done the deceiving was myself since the subject at no time knew how well she was doing nor had any idea of cards which were being turned by myself. . . .

ESPionage!

Rhine's work continued to be a subject of public debate for many years, but with more and more researchers carrying out their own research programmes into various ESP subjects, telepathy was soon overshadowed by subjects such as clairvoyance and precognition, which brought startling experimental results. Then, in the late 1950s, telepathy was suddenly back in the news with the publication in the French press of reports that successful telepathy tests had been carried out between a subject in the submerged American submarine USS *Nautilus* and an agent on shore. The military implications of such methods of communication, if they proved to be reliable were obvious; and they aroused great interest.

Despite the United States Navy's denial of the *Nautilus* story, the Soviets took it seriously – with the result that the work of Russian psychical investigators, which had been classed as top secret for 30 years, was made public. Among them was physiologist Dr Leonid Vasiliev. He claimed that Soviet parapsychologists had received encouragement for their research from high up in the party organisation – which suggests that Stalin himself may have been interested in the use of telepathy for military purposes.

Dr Vasiliev had been using hypnotised subjects to investigate 'mental radio', and when a book about his work was published in 1962 he revealed that he and other researchers had been able to make hypnotised

Recent research suggests that telepathy may occur much more often than is generally thought.

In a series of dream telepathy experiments carried out at the Dream Laboratory in Brooklyn, New York, an 'agent' studied a picture postcard and transmitted the image telepathically while the subject was asleep in another room. An electro – encephalograph monitored brain patterns: when a change in the patterns indicated the subject was dreaming, he or she was woken up and asked to describe the dream.

There was a high degree of similarity between the transmitted images and the dreams, although the target pictures were never received whole. The images were interwoven with the dream the subject was having at the time.

patients carry out actions by telepathic order, and even hypnotise people by telepathy. In one extraordinary case, a woman whose body was paralysed down the left side was the subject of the experiments. Her condition was psychosomatic, and under hypnotism she was able to move her left arm and leg with ease. Vasiliev discovered, however, that he had only to give *mental* commands and she would move her left hand, arm, or foot as requested – without the use of hypnotism.

He was able to demonstrate this mental communication before a group of observers. As an extra precaution the patient was blindfolded and not a word was spoken. Each instruction was written down and witnessed by the group before either Vasiliev or his co-worker, hypnotist Dr Finne, concentrated on it. The woman obeyed with remarkable accuracy, and she was even able to say whether it was Vasiliev or Finne who was giving the instruction.

More recently, the Russians have carried out even more startling demonstrations of telepathy using a biophysicist, Yuri Kamensky, and a Moscow actor and journalist, Karl Nikolaiev. Kamensky was in Novosibirsk in Siberia, Nikolaiev in Moscow, and a committee of scientists supervised the session. The results provided overwhelming evidence for mental communication between the two men.

In one test, Nikolaiev correctly described six objects that had been given to Kamensky; he was also able to identify 12 out of 20 ESP cards. What is particularly impressive about this Russian series is that the scientists succeeded in producing independent instrumental confirmation that something paranormal was going on.

They wired Nikolaiev to an electroencephalograph (EEG) machine, which monitors brain waves. They found that as soon as Kamensky began to transmit images, Nikolaiev's brain waves altered. Using this knowledge they devised a technique for sending messages in Morse code. Instead of asking Kamensky to think of an object, they asked him to imagine he was fighting Nikolaiev. As the scientists in Moscow watched the recording of Nikolaiev's brain waves on the EEG, they found that there was a distinct change in the pattern whenever Kamensky imagined he was fighting him. Kamensky was able to transmit Morse 'dots' and 'dashes' by imagining 'fighting bouts' of various lengths: a 45-second bout produced a burst of activity that was interpreted as a dash, while a 15-second bout was read as a dot. In this way, the scientists in Moscow were able to identify the Russian word *mig* – meaning 'instant' – which Kamensky had transmitted in Morse code from 2000 miles (3200 kilometres) away in Siberia.

Interestingly, a similar technique using different methods has been successfully demonstrated in the West. It followed the accidental discovery by a Czechoslovakian researcher, Dr Stepan Figar, that intense thought about a person produced an increase in that individual's blood volume – a change that could be accurately measured by a device called a plethysmograph.

Mental radio

Douglas Dean, a British-born electrochemist and professor of computing who is also a leading psychical researcher, saw the potential of this discovery for telepathy tests. His research revealed that, when a telepathic sender concentrates on the name of someone with whom a subject wired to a plethysmograph has an emotional tie, a change in the subject's blood volume is often recorded. Together with two engineers of the Newark College of Engineering in New Jersey, Dean designed a system using a plethysmograph for sending messages in Morse code.

If the sender concentrates on the name of a person who is emotionally significant to the subject, the plethysmograph produces a measurable response which is interpreted as a Morse dot. If no response is registered during a specified period of time, this is noted as a Morse dash. Using this technique, Dean has successfully communicated over short and long distances. In one remarkable instance he sent a Morse message over a distance of 1200 miles (2000 kilometres), between New York and Florida.

Despite these discoveries and the outstanding individual results that some experiments have produced, not all researchers are so successful when they attempt to duplicate telepathy tests. Mental radio remains an elusive phenomenon, although it is one that has occurred often enough – spontaneously and in the laboratory – to satisfy most investigators of its reality.

Clairvoyance – mental television – can be used in crime detection. See page 66

Top: the nuclear submarine USS *Nautilus*. In the late 1950s it was rumoured that the US Navy had been carrying out telepathy experiments with an agent on shore and a sender aboard the submerged craft

Above: Karl Nikolaiev (left) and Dr Yuri Kamensky (second from right). They devised a method of sending Morse messages by telepathy

Left: Dr Leonid Vasiliev, the Soviet psychical researcher

On the bigfoot trail

Hundreds of sightings all over the North American continent suggest that the fabled bigfoot really does exist. But how can this primitive creature survive in the world's most developed society? JANET and COLIN BORD consider the most reliable reports

RELIABLE REPORTS OF 'man-beasts' on the North American continent have been traced as far back as the 1830s. We have to rely on old newspaper accounts for our data before 1900, but determined researchers have found some intriguing descriptions of beasts very similar to those reported today. For example, in 1851 a local newspaper carried the story of two hunters in Greene County, Arkansas, who saw a herd of cattle being chased by 'an animal bearing the unmistakable likeness of humanity'.

> He was of gigantic stature, the body being covered with hair and the head with long locks that fairly enveloped the neck and shoulders. The 'wild man', after looking at them deliberately for a short time, turned and ran away with great speed, leaping 12 to 14 feet [3.6 to 4.3 metres] at a time. His footprints measured 13 inches [33 centimetres] each.

The newspaper reporter added that the beast was thought to be 'a survivor of the earthquake disaster which desolated that region in 1811'. In nearly all these early reports the man-beasts are referred to as 'wild men', the assumption being that they must be humans who have taken to the woods and in so doing somehow developed a thick coat of body hair. Modern evolutionary theory, however, suggests that this is unlikely.

The location of the 1851 sighting in Arkansas shows that bigfoot reports are not confined to the north-western states (northern California, Oregon and Washington) and British Columbia, where so many originate. Although these areas, with their vast tracts of forested mountains, have produced more reports than other regions, bigfeet or their footprints have been seen in nearly all the American states and Canadian provinces. Florida, far away from what is thought of as traditional bigfoot territory, has been particularly rich in sightings of the similar 'skunk ape' in recent years.

Many reports simply describe a man-beast, seen briefly in wooded country. But there are enough detailed reports for trends and characteristics to be apparent. Bigfeet seem to be timid, not wishing to get too close to humans. However, they also have a streak of curiosity and sometimes come close to people camping in the woods at night, look through their belongings, and occasionally also rock their camper or car. This behaviour, and early reports of the destruction of mineral prospectors' camps, may suggest a

Above left: a still from the only ciné film ever taken of a bigfoot. Rigorous analysis has not proved it to be a fake – but sceptics still insist that the creature is a large actor dressed up in animal skins. Casts (left) were taken of footprints found in the area after the sighting

Above: Albert Ostman, who says he was held captive by a bigfoot family in British Columbia in 1924

Below: typical bigfoot country in the Rocky Mountains, Canada

wish to frighten intruders away.

Bigfeet have also been seen wandering near rural houses and settlements, possibly attracted by the easy availability of food in such places. But despite their frightening appearance and the provocative behaviour of their discoverers, (whose reaction is frequently to shoot first and ask questions afterwards), bigfeet are not aggressive towards humans. Reports of injuries caused by them are rare.

As the 20th century progressed and more people became aware of bigfeet, so more reports were made of old and recent sightings, until in the 1960s and 1970s there was a vast number of reports on file. Although this was obviously due in part to the greater publicity, did it also mean that bigfeet were being seen more frequently? Since their habitat must gradually be shrinking as civilisation advances, it would be reasonable to expect their numbers to be declining. Perhaps it is this very pressure on living space that forces them to visit settlements for food and this might explain the increased number of reported sightings.

The *Bigfoot casebook* records nearly 1000 sightings in the past 150 years and this collection of cases is by no means complete. If, as has been estimated, only about one tenth of all sightings are ever reported, then there may have been as many as 10,000 sightings during that period. There are also many other reports of large, human-like footprints being found, usually in mud, snow or sand where they show up well, and it is usually assumed that a bigfoot left these tracks, even when the creature has not been seen. Sometimes researchers investigating reports also find hair and faeces that are suspected to be a bigfoot's, but analyses done on these substances are usually irritatingly inconclusive.

A selection of a few of the many sightings reported this century will give a clear picture of bigfoot and his behaviour. In 1969 Albert M. Fletcher wrote about his encounter 50 years before, when he was a lumber-camp worker in Washington.

> In the fall of 1917 when I was 17 years old I was working for a lumber camp on the Cowlitz River in the state of Washington. One moonlit evening I was walking down a logging road en route to a dance when I had the uneasy feeling that something was following close behind me. I kept looking over my shoulder but could not see anything. When I came to a bend in the road I ducked behind a tree and waited to see what it was. Almost immediately a very large man-like creature about $6\frac{1}{2}$ or 7 feet [2 or 2.1 metres] tall came into view.
>
> It was walking on its hind legs, was covered with dark hair, had a bearded face and large chest and so far as I could see was not wearing clothes of any kind. Startled, I let out a yell of alarm and the creature instantly turned and ran off into the woods, still on its hind legs. I told some of my co-workers about it and some laughed but others said they, too, had seen it. No one had an explanation for it and no name was given to it, but all agreed that it was a large ape-like something and that it also resembled a very large man.

Kidnapped by a man-beast

Another bigfoot report, dating from 1924, describes what, if it is true, is the most dramatic bigfoot encounter on record. Albert Ostman claims to have been kidnapped by a bigfoot and held captive for several days before he managed to escape. The kidnap took place near Toba Inlet in British Columbia, when Ostman was prospecting and camping in the mountains. An 8-foot (2.4-metres) bigfoot picked him up in his sleeping bag one night and carried him across country for what seemed to the hot and cramped captive like three hours.

It was still dark when they arrived at their destination, but when it got light Ostman saw there were four bigfeet, male and female adults and male and female children. During his captivity Ostman was able to study the family's way of life, and to ponder his best method of escape. All attempts were blocked by the 'old man', as Ostman called him, whose mere size was an imposing deterrent. Ostman had his rifle with him but was loth to cause the creatures any injury, since they had not harmed him. He finally escaped by feeding the 'old man' a huge quantity of snuff and thereby incapacitating him. While the bigfoot rushed to find some water, Ostman

grabbed his belongings and ran for his life.

Encounters in which the witness is able to get a long, close look at the creature are the most interesting; a perceptive and unflurried witness can add greatly to our knowledge of the creature. One of the best reports of this kind was made by William Roe, who saw a bigfoot on Mica Mountain in British Columbia in October 1955.

Roe was hidden in a bush, so the bigfoot, a female about 6 feet (1.8 metres) tall and 3 feet (1 metre) wide and weighing around 300 pounds (135 kilograms), came towards him unaware she was being watched. When the bigfoot was 20 feet (6 metres) away, she squatted by the bush Roe was hiding in.

He later wrote a careful description of the bigfoot's head, face and hair, of the shape of her body and the way she walked. He wondered briefly if he had unknowingly stepped into a film set and was looking at a made-up actor, but soon discarded that idea. His report continues:

> Finally, the wild thing must have got my scent, for it looked directly at me through an opening in the bush. A look of amazement crossed its face. It looked so comical at that moment I had to grin. Still in a crouched position, it backed up three or four short steps, then straightened up to its full height and started to walk rapidly back the way it had come. For a moment it watched me over its shoulder as it went, not exactly afraid, but as though it wanted no contact with anything strange.

Roe considered shooting what would be a unique specimen, and even raised his rifle. But he could not fire. 'Although I have called the creature "it", I felt now that it was a human being and I knew I would never forgive myself if I killed it.'

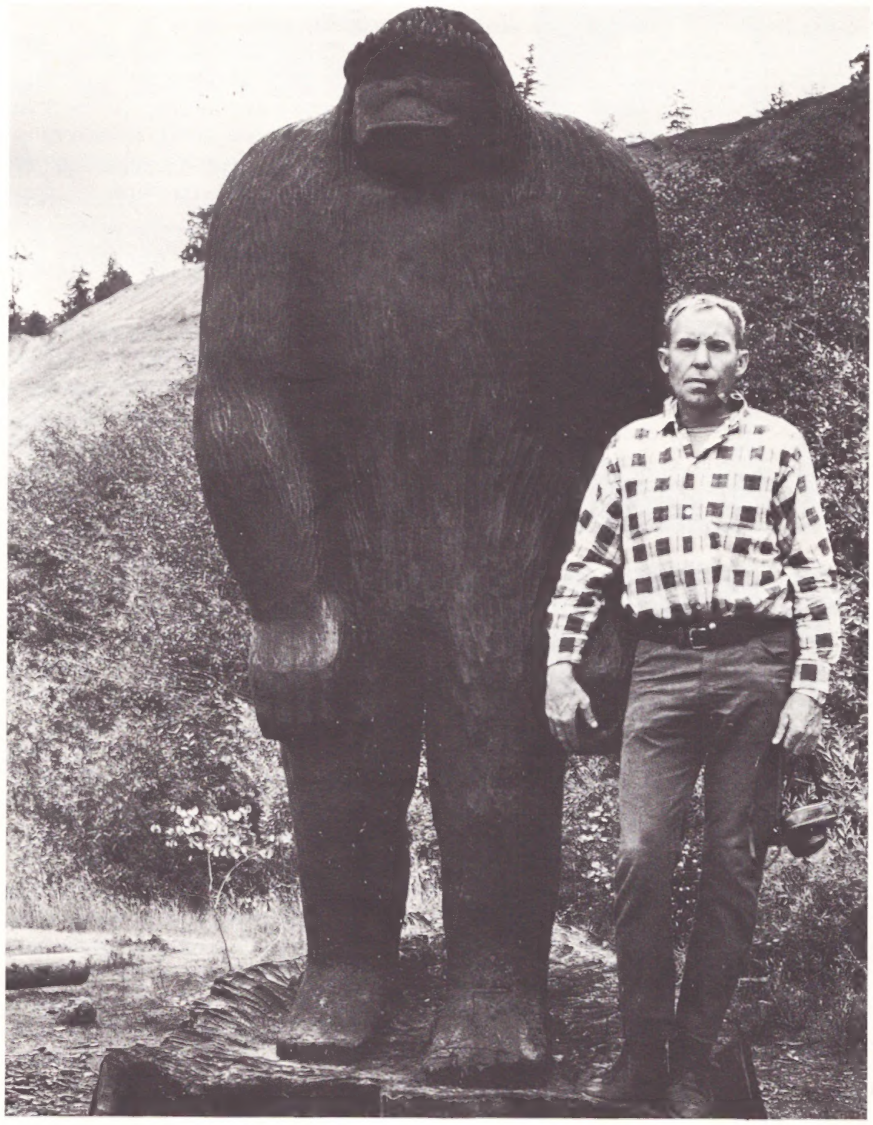
Human or animal? The witnesses are not sure, and neither are the researchers. 'If only we had a corpse to examine,' they cry. But those who feel that the priority is to kill a bigfoot and thus prove its existence once and for all are opposed by those who feel equally strongly that the creature should be left in peace. What gives man the right to commit murder simply to satisfy his curiosity?

A few reports suggest that someone with enough patience and nerve might even be able to make friends with a bigfoot. In the autumn of 1966 a couple living near Lower Bank in New Jersey found footprints 17 inches (432 millimetres) long outside their house, and saw a face peering in at a window over 7 feet (2.1 metres) high. They regularly left vegetable scraps for the bigfoot, which it ate, but one night they left nothing and their visitor showed its annoyance by throwing a dustbin against the wall. A shot fired into the air failed to deter it, so the man fired *at* the bigfoot, which ran away and did not return.

Thirty feet (9-metres) of wobbly 16-millimetre colour film shook the bigfoot-hunting world in 1967, and the questions posed by the film still have not been answered to everyone's satisfaction. Behind the camera was bigfoot-hunter Roger Patterson, who in October that year was riding through the remote forests of the Bluff Creek area of northern California with Bob Gimlin, on the lookout for signs of bigfeet. Their horses reared in fright when they suddenly came across a female bigfoot squatting beside a creek. Patterson leapt down, grabbed his camera and began to run after the retreating figure, filming as he went. Before the bigfoot was lost to sight among the trees, it turned to look back at the men. The famous strip of film has been analysed many times since 1967, but although no one has been able to prove it a hoax, scientists remain suspicious.

This may be due to natural caution, or the curious argument that 'Bigfoot can't exist, therefore it doesn't'. Meanwhile this creature continues to appear regularly in North America, to alarm but not hurt the witnesses who are invariably taken by surprise, and to puzzle all who ponder its presence.

Are man-beasts from the natural world or could their origins be much stranger? See page 74



Bigfoot hunter Rene Dahinden stands beside a statue of a bigfoot, sculpted by Jim McClarin, at Willow Creek, California. The figure, modelled on descriptions of bigfeet seen in the area, is 8 feet (2.4 metres) tall, 41 inches (1.04 metres) wide at the shoulder and has feet measuring 18 by 10 inches (46 by 25 centimetres)

A message from the Earl of Clancarty

Perhaps better known as the author Brinsley le Poer Trench, Lord Clancarty has written numerous books on the paranormal, is President of the international UFO organisation Contact, and since 1979 has been Chairman of the House of Lords UFO Committee

WHAT ARE CALLED 'paranormal' abilities include telepathy, telekinesis, clairvoyance, levitation, spiritual healing, astral travelling and many other transcendental activities. Although a number of people on this planet have one or more of these abilities, it is my firm conviction that a few thousand years ago, it was normal for every human being to be able to use all those abilities. Some years ago, Sir Fred Hoyle, the famous astronomer and writer, wrote a book called *Of men and galaxies*. I was kindly given permission to quote a passage from his book at the front of mine, *The flying saucer story*. It read as follows:

'You are all familiar with an ordinary telephone directory. If you want to speak to someone, you look up his number and dial the appropriate code. My speculation is that an interchange of messages is going on on a vast scale all the time and that we are as unaware of it as a pygmy in the African forests is unaware of the radio messages that flash at the speed of light round the Earth. My guess is that there might be a million or more subscribers to the galactic directory. Our problem is to get our name into that directory.'

I entirely agree with Sir Fred Hoyle's thesis, and would add that the many advanced civilisations in our Galaxy are working closely together. What is more, I think that they have colonised uninhabited planets. I do not go along with the idea that the original creation was that of Adam and Eve at the suggested Biblical date of BC 4004. This was the result of one of many visits to Earth from advanced civilisations in our Galaxy, or possibly, from beyond. A recent book by Maurice Chatelain called *Our ancestors came from outer space* highlights this aspect.

The Sumerians, the Mayan people, the Chinese, the Japanese, the Celts, the Scandinavians, the Hopi Indians of North America, and indeed, practically every country in the world has its own tale of extraterrestrial visitors coming to them. The most advanced civilisation in fairly recent times was that of the Atlanteans, though there may have been more advanced ones thousands of years before.

The Atlanteans were god-like beings, as are all those from advanced civilisations in our Galaxy. They not only came in space ships using free energy, but were capable of using all the 'paranormal' powers.

In one of my books I discussed Atlantis, stating that it originally covered the whole of what is now the Atlantic Ocean, but that its influence spread into South America and into Europe. I advanced the view that Atlantis went down under the waters in three great catastrophes spread over a few thousand years. The last was the one mentioned by Plato who referred to the Atlantean island called Poseidon, which was located somewhere near the Azores.

Edgar Cayce, known as 'The Sleeping Prophet' and one of the most famous healers and seers of our time, prophesied that part of the remains of Atlantis would be found off the coast of Florida in the period 1968–69. This actually happened off Bimini in the Bahamas where big stone pillars and other edifices were found under the water. He, too, thought that Atlantis had gone down in three stages.

Other famous prophets and gifted people include the well-known Nostradamus (Michel de Notredame) and the famous Comte de St Germain, an illuminist, rosicrucian and freemason. Frederick the Great referred to him as 'the man who does not die'. A brilliant musician and fantastic linguist, St Germain also possessed a superb memory and could write an article on two pieces of paper using both hands simultaneously; both papers would be perfect reproductions of each other. Some people still think he is alive and with us now.

Another amazing person with extraordinary abilities was Fulcanelli, the master alchemist. Before mysteriously disappearing, Fulcanelli handed over his *Le mystère des cathédrales* to a French student of alchemy called Eugene Canseliet, asking him to get it published. It is, I think, probably the most fascinating book of all time.

There is a legend that Fulcanelli – whose real name is not known – is still alive. Like St Germain – who when over 100 Earth years old, still looked to be in his forties – Fulcanelli is said never to age.

These powers lie within each of us. We must try and get back to our original god-like status. Readers of this great work will, I am sure, find it not only fascinating, but of practical use in bringing us back to cultivating the attributes that our god-like ancestors possessed long ago. That is how we are meant to live, both today and in the future.

CClancarty.

Lord Clancarty says that all of us once had psychic powers – but today paranormal experiences are the exception rather than the rule. Have you *had any? Write to* **The Unexplained** *and tell us about them.*

THE WORLD'S MYSTERIOUS PLACES – 2

The lines of Nazca